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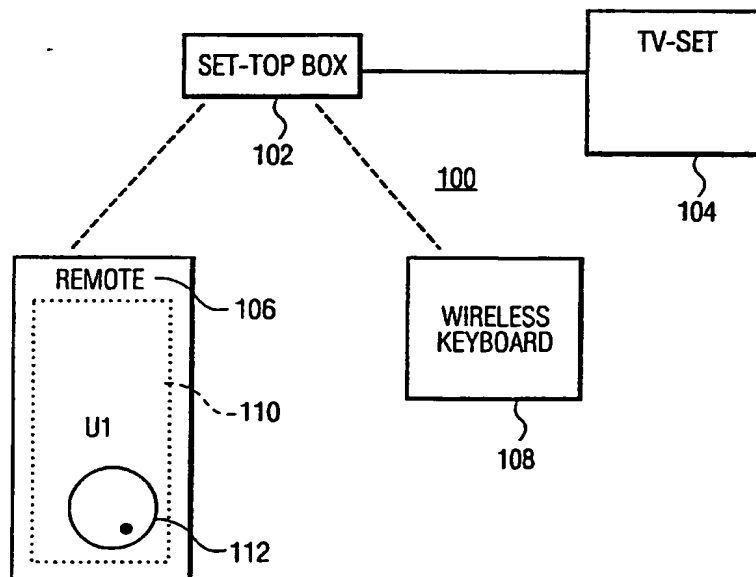
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(54) Title: **JOG WHEEL FOR FAST WEB BROWSER NAVIGATION**



(57) Abstract: A user controls a jumping highlight on the TV display monitor via a set-top box to select a user-interactive item in a Web document. To control the speed of the jumping highlight, the user manipulates a jog wheel on a remote. According to the orientation and speed of rotation of the wheel, the remote issues TAB or SHIFT+TAB IR commands at a higher or lower rate.

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Jog wheel for fast web browser navigation.

The invention relates in particular to a user-input system for navigating electronic documents in a browser.

5           A typical electronic interactive document, e.g., as retrieved from the Web and made accessible via a web browser, has interactive items such as hyperlinks, pull down menu's, clickable ads, clickable pictures, etc. One way to interact with such a document is, for example, via a PC that enables the user to go to any interactive item directly using the computer mouse or a joy-stick. Another way is via a set-top box that converts a TV set into a  
10 user interface to the Internet. A set-top box is a specialized computer that contains a Web browser, i.e., a Hypertext Transfer Protocol client, and is capable of TCP/IP communication.

          Typical Web browsers enable the user to scan the interactive items sequentially using the alphanumeric keyboard's TAB key for scanning in a forward direction and the SHIFT+TAB keys for scanning in a reverse direction. The sequence is determined by  
15 a so-called TAB-list that is created when the Web page is being parsed. When the user hits the TAB key, a highlight or a border jumps from a current interactive item to the next one. Holding down the TAB key or the SHIFT+TAB keys lets the highlight or border race along the list in the forward or reverse directions, respectively.

          A set-top box typically does not support a mouse for navigation purposes. The  
20 user can navigate the web page using the TAB and TAB+SHIFT keys or the arrow keys of the set-top box's keyboard that typically communicates via IR with the box.

          If an interactive document contains a large number of interactive items, and  
25 the user wants to go to an interactive item halfway down the page, he or she is required to hit the TAB or arrow keys repeatedly for a relatively long time to go to an interactive item further down the list. This is not only time consuming but also tiresome. Alternatively, or in addition, the user can hold the TAB key down and visually follow the jumping highlights on the screen. This has as a drawback that the highlight does not seem to follow a regular path as

it jumps from one item to a next one. The order of the TAB-list typically does not correspond with, for instance, a path that leads along the interactive items, as displayed, in an intuitively regular or predictable manner, e.g., in a regular zig-zag line from the upper left-hand corner of the page to the lower right-hand corner. Furthermore, the speed of the highlight is too high  
5 to accurately position it over the desired interactive item in one shot.

The inventors therefore propose an information processing system with a user-interface for enabling user-interaction with an electronic document that comprises multiple interactive items. The user-interface generates the TAB key command and the TAB+SHIFT key command upon rotating a wheel in a first direction and second direction, respectively.  
10 The user thus can control the speed of the jumping highlight in an ergonomically acceptable fashion.

The wheel can be a jog wheel or shuttle wheel as used, for example, on a remote control device for a VCR. There, the wheel is mounted on the top face of the remote. The wheel can be rotated by dragging it around using a finger. The wheel enables the user to  
15 view individual frames of the video recorded and at a speed that he or she desires by rotating the wheel faster or more slowly. Alternatively, the wheel can be a thumb-wheel as disclosed in, e.g., U.S. serial no. 09/464,855 (attorney docket PHA 23,875) filed 12/16/99 for Willem Bulthuis et al., for HAND-EAR USER INTERFACE FOR HAND-HELD DEVICE. This document relates to a user-programmable device wherein the user scans menu options based  
20 on auditory feedback upon rotating a thumb wheel.

The user-interface is preferably accommodated on a hand-held device, e.g., a remote control device.

Instead of wheel, the user-interface can have another input device, e.g., a thumb- or finger-operated slider, that translates a continuously variable user-actuation into an  
25 associated continuously variable speed of the jumping highlight by accordingly controlling the issue rate of TAB commands.

The input device can be implemented by hardware, as with a physical wheel or slider, or emulated in software as with a touch screen on a universal programmable remote such as the Pronto of Philips Electronics.

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The invention is explained by way of example and with reference to the accompanying drawings, wherein Fig.1 is a block diagram of a system in the invention.

Fig.1 is a block diagram of an information processing system 100 in the invention. System 100 comprises a set-top box 102, here connected to a TV set 104. System 100 further comprises a hand-held remote control device 106 and an alphanumeric keyboard 108. Remote 106 and keyboard 108 communicate with set-top box 102 using a wireless protocol, e.g., in infra-red (IR). Set-top box 102 and wireless keyboard 108 are, for example, those that are being marketed by Philips Electronics as the Philips WebTV and its accessories. As mentioned above, most browsers enable selection in a menu or among other interactive items in a Web document via keyboard 108 by controlling a jumping highlight on the display monitor of TV set 104 with the TAB and the SHIFT+TAB keys.

Remote 106 has a user-interface 110 that comprises, among other things, a component 112 that the user can move in one direction or in two opposite directions. In this example, component 112 comprises a jog wheel. Actuating component 112 causes the remote to issue TAB commands or SHIFT+TAB commands in IR. By actuating component 112 in a first direction faster or slower, the user controls the issue rate of TAB commands in IR. If component 112 allows actuation in also the opposite direction, the user controls the rate of both TAB commands and SHIFT+TAB commands. The result is that the user is able to control the speed of the jumping highlight. For wheel 112 the actuation comprises rotating wheel 112 clockwise or counterclockwise relative to the top face of remote 106.

It is clear that less conventional browsers may use a combination of commands, different from the TAB and SHIFT+TAB commands, to move the highlight up or down a sequence of interactive items, the sequence being generated upon parsing the Web document. For example, another combination of commands representative of keys on a wireless keyboard can be used. It is to be understood that the terms ATAB $\equiv$  and ASHIFT+TAB $\equiv$  as discussed herein should also cover these alternatives.

Instead of a wheel, component 112 can comprise another element, e.g., a slider (not shown). Sliding the slider up or down causes remote 106 to issue TAB or SHIFT+TAB commands. As the movement of the slider is not cyclic, in contrast with the jog wheel, it is preferred that the total number of commands that can be issued by sliding the slider in one direction is larger than the number of user-interactive items on most Web pages. Again, a higher or lower speed of sliding causes the highlight to jump faster or slower.

The invention can also be implemented using a universal programmable remote control device such as the Pronto of Philips Electronics. The Pronto has a touch screen for user-interaction with soft keys displayed on the device's LCD. The soft keys are

typically displayed as clustered in panels. The user can fully program what keys to cluster in what panel and can fully program what (IR) code to associate with what key. Imagine a panel made up with keys in a circle-like configuration. Each key thus has two direct neighbors. The circle can be traversed clock-wise or counter clock-wise: the keys can be touched by sliding a  
5 finger across the screen in a circular fashion. The direction of traversal is determined by establishing which key had been actuated before the last was actuated. Thus a soft jog wheel can be implemented.

Instead of, or in addition to, the combination of set-top box 102 and remote 106, system 100 can comprise other apparatus that enable interaction with the Web or  
10 interactive electronic documents through a browser or clipper. Again, a user-interface either provided on the apparatus or on another apparatus or device such as a remote comprises a component for issuing TAB and/or SHIFT+TAB commands upon variable user-actuation of the component in a first direction and/or second direction. For example, the apparatus can be a notebook computer or PDA. Within this context, reference is made to U.S. serial no.  
15 09/427,821 (attorney docket PHA 23,786) filed 10/27/99 for Joost Kemink and Richard Sagar for PDA HAS WIRELESS MODEM FOR REMOTE CONTROL VIA THE INTERNET. This document relates to a PDA that is combined with a wireless modem to enable remote control of CE equipment via the Internet and a local home server, thus creating a Very Remote Controller.

## CLAIMS:

1. An information processing system (100) with a user-interface sub-system (110) for user-interaction with an electronic document that comprises multiple user-interactive items, wherein the sub-system translates a continuous user actuation in a first direction into an associated speed of a jumping highlight in a first orientation by accordingly  
5 controlling a first issue rate of TAB commands.
2. The system of claim 2, wherein the sub-system translates the continuous user actuation in the second direction, different from the first direction, into an associated speed of the jumping highlight in a second orientation, different from the first orientation, by  
10 accordingly controlling a second issue rate of SHIFT+TAB commands.
3. The system of claim 1, wherein the sub-system comprises a wheel (112).
4. A remote control device (106) for use in an information processing system  
15 (100) for enabling user- interaction with an electronic document that comprises multiple user-interactive items, wherein the remote control device translates a continuous user actuation in a first direction into an associated speed of a jumping highlight in a first orientation by accordingly controlling a first issue rate of TAB commands.
- 20 5. The device of claim 4, wherein the device translates a continuous user actuation in a second direction, different from the first direction, into an associated speed of the jumping highlight in a second orientation, different from the first orientation, by accordingly controlling a second issue rate of SHIFT+TAB commands.
- 25 6. The device of claim 4, wherein the remote control device comprises a wheel (112).

7. A method of enabling a user to interact, through a user-interface (110), with an electronic document that comprises multiple user-interactive items, wherein the method comprises:

- enabling continuous user actuation of the user-interface in a first direction;
- 5 - translating the user actuation in a first direction into an associated speed of a jumping highlight in a first orientation by accordingly controlling a first issue rate of TAB commands.

8. The method of claim 7, comprising translating a continuous user actuation in a second direction, different from the first direction, into an associated speed of the jumping  
10 highlight in a second orientation, different from the first orientation, by accordingly controlling a second issue rate of SHIFT+TAB commands.

9. The method of claim 7, wherein the user-interface comprises a wheel (112) for enabling the continuous user actuation in the first direction .

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10. The method of claim 8 wherein the user interface comprises a wheel (112) for enabling the continuous user actuation in the first and second directions.

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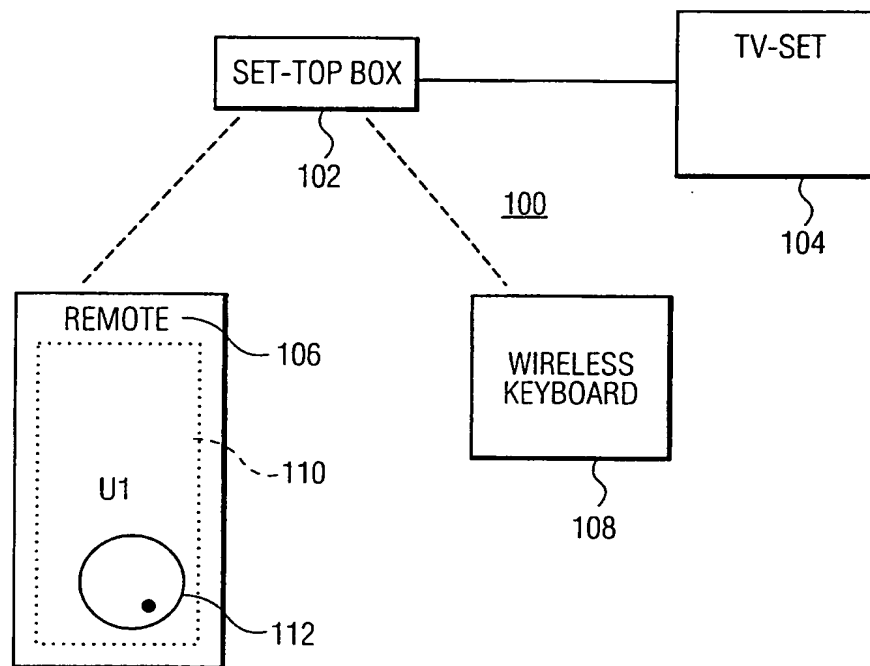


FIG. 1



# INTERNATIONAL SEARCH REPORT

Internat. Application No  
PCT/EP 00/13229

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 G06F3/033 H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G06F G06K H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 92 20024 A (DIGITAL EQUIPMENT CORP.) 12 November 1992 (1992-11-12) page 28, line 14 -page 29, line 4 page 33, line 15 -page 34, line 9; claims 2-4; figure 4 ---	1,7
A	US 6 016 484 A (WILLIAMS ET AL.) 18 January 2000 (2000-01-18) column 21, line 46 -column 22, line 1; figure 9 ---	1,7
A	EP 0 838 945 A (MATSUSHITA ELECTRICAL INDUSTRIAL CO. LTD.) 29 April 1998 (1998-04-29) page 4, line 37 - line 42; figure 3 --- -/--	4,6-10

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- \*E\* earlier document but published on or after the international filing date
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- \*Y\* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

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PCT/EP 00/13229

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 56188 A (SONY ELECTRONICS INC.) 10 December 1998 (1998-12-10) page 3, line 30 -page 5, line 4 page 12, line 40 -page 14, line 20; figures 5,7,9 -----	1,4,7
P,A	WO 00 75842 A (MYFOLDER.COM INC) 14 December 2000 (2000-12-14) page 16, line 1 - line 21 page 24, line 12 -page 25, line 22 -----	1,3,7,9

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Information on patent family members

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WO 0075842 A	14-12-2000	NONE	